

REMARKS

Applicants have carefully considered the August 3, 2009 Office Action, and the amendments above together with the comments that follow are presented in a bona fide effort to address all issues raised in that Action and thereby place this case in condition for allowance. Claims 1-32 are pending in this application.

In response to the Office Action dated August 3, 2009, claims 3, 9, 16 and 26 have been amended. Adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure as, for example, the depicted embodiments and related discussion thereof in the written description of the specification, including numbered paragraphs [0085]-[0086] of the published version of the present application. Applicants submit that the present Amendment does not generate any new matter issue. Entry of the present Amendment is respectfully solicited. It is believed that this response places this case in condition for allowance. Hence, prompt favorable reconsideration of this case is solicited.

Claims 3, 9, 16 and 26 were rejected under 35 U.S.C. § 112, second paragraph. Applicants respectfully traverse. Claims 3, 9, 16 and 26 have been amended to clarify that the compressive stress in claims 3, 9, 16 and 26 refers to compressive stress of the entire coated film, as described in the specification. At numbered paragraphs [0085]-[0086], it is disclosed that the coated film according to the present invention has compressive stress. Preferably, the compressive stress is in a range from not smaller than -15 GPa to not larger than 0 GPa. More preferably, the lower limit of the compressive stress is set to -10 GPa and further preferably to -8 GPa, while the upper limit thereof is more preferably set to -0.5 GPa and further preferably to -1 GPa.

Accordingly, one having ordinary skill in the art would not have difficulty understanding the scope of the presently claimed subject matter, particularly when reasonably interpreted in

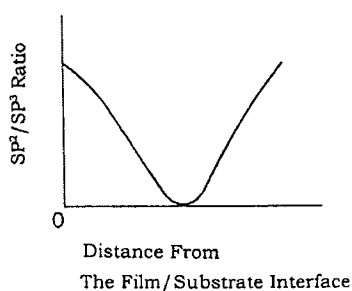
light of the supporting specification. The Examiner provided no arguments to justify why one having ordinary skill in the art would have had difficulty understanding Applicant's claimed subject matter. Therefore, it is respectfully submitted that the imposed rejection under 35 U.S.C. § 112, second paragraph is not legally viable and hence, Applicants solicit withdrawal thereof.

Claims 1-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fukaya et al. (U.S. Pat. No. 2001-353603, hereinafter “Fukaya”) in view of Hirano et al. (U.S. Pat. No. 6,066,399, hereinafter “Hirano”) and further in view of Sheeja et al., Tribological Properties and Adhesive Strength of DLC Coatings Prepared Under Different Substrate Bias Voltages, Wear 249 (2001), pg. 433-439 (hereinafter “Sheeja”), as evidenced by Ohring, Material Science of Thin Films, Deposition and Structure, 2nd ed. 2004, hereinafter “Ohring”). Applicants respectfully traverse.

As indicated at page 4, paragraph 10 of the Office Action, the Examiner conceded that Fukaya does not disclose the relative minimum point, and appears to have cited Hirano in an attempt to remedy this deficiency of Fukaya. Hirano, however, does not appear to discuss the “relative minimum point” as alleged by the Examiner at page 6, paragraph 15 of the Office action.

Specifically, the sp^2/sp^3 ratio in Hirano exhibits the distribution as shown in Fig. 5:

FIG. 5



Assuming for the sake of argument that the relation between the magnitude of the sp^2/sp^3 ratio and the magnitude of the compressive stress is interpreted as suggested by the Examiner, who has cited Sheeja, the distribution of the compressive stress in Hirano will exhibit an inverted state of Fig. 5 (above). Namely, regarding distribution of the compressive stress in Hirano, it would appear that the compressive stress at the surface of the coated film increases from the surface toward the intermediate point located between the surface and the substrate/film interface, the compressive stress attains the relative maximum point at the intermediate point, and thereafter the compressive stress decreases toward the substrate/film interface.

In contrast, independent claim 1 describes, in pertinent part that “said strength distribution is characterized in that the compressive stress at a surface of said coated film continuously decreases from said surface of said coated film toward a first intermediate point located between said surface of said coated film and a bottom surface of said coated film and the compressive stress attains a relative minimum point at said first intermediate point.” (emphasis added)

At page 5, paragraph 12 of the Office Action, the Examiner assumes that the hard carbon thin film in Hirano has a two layer system. Even if the Examiner’s assumption is accurate, however, Hirano neither discloses nor remotely suggests the distribution of the compressive stress according to the present claimed subject matter (that is, the distribution characterized in that the compressive stress at the surface of the coated film decreases from the surface toward the intermediate point located between the surface and the substrate/film interface and the compressive stress attains the relative minimum point at the intermediate point).

In addition, although the Examiner asserts that Hirano has a two layer system at page 5, paragraph 12 of the Office Action as described above, the ground for such assertion is unclear

and it seems inappropriate to divide the structure into two layers. Assuming for the sake of argument that the film in Hirano can be divided into two layers, distribution of the compressive stress in Hirano will exhibit an inverted state of Fig. 5, as described above. Therefore, the feature that the compressive stress at the film surface portion is high cannot be derived from the disclosure of Hirano. In any event, the Examiner's finding does not seem reasonable in view of the disclosure of the Hirano reference.

Therefore, in view of the arguments presented above, the present claimed subject matter is not rendered obvious by the Examiner's proposed combination of Fukaya, Hirano, Sheeja and Ohring. Even if the applied references are combined as suggested by the Examiner, the claimed subject matter as a whole would not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). Further, if any independent claim is non-obvious under 35 U.S.C. § 103(a), then any claim depending therefrom is non-obvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

It is believed that all pending claims are now in condition for allowance. Applicants therefore respectfully request an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an Examiner's amendment, the Examiner is invited to call Applicants' representative at the telephone number shown below.

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To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Brian K. Seidleck
Registration No. 51,321

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 BKS:ldw
Facsimile: 202.756.8087
Date: October 15, 2009

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